SCIENCE IN PARIS DURING THE SIEGE

IN a somewhat striking passage in the *De Augmentis Scientiarum* Francis Bacon contrasts the endurance of monuments of learning with that of those raised by the hand of man. The verses of Homer, he reminds us, have endured for more than twenty centuries, during which time numberless palaces, temples, and cities have disappeared from the face of the earth. Some such reflection as this may have induced the members of the *Académie des Sciences* of Paris to continue their weekly meetings with perfect regularity during the bombardment. While everything else was turned upside down, while a dynasty was passing away, while sons and brothers were perishing around them, an enemy at their gates, want within their walls, and missiles of war threatening themselves and their household gods, these men continued their usual studies. We are reminded of Archimedes at the siege of Syracuse, save that there we have but one man, while here it is a large body of the intellectual flower of the country. Some of the more active of the members are men who have attained that philosophic calm, which not even the terrors of war can dispel, nothing diverts them from the even tenour of their way—

Si fractus illabatur orbis,
Impavidum ferient ruinæ.

We frequently meet with the names of Dumas, Elie de Beaumont, and Chevreul in the *Comptes Rendus* published during the siege. The youngest of these men was born in the last year of the last century; they have seen every phase of Parisian life, are men of infinite experience and learning, the very soul of the Academy; they have held office under various Governments, have seen more than one revolution; barricades and street fighting, and the Parthian cap are no novelty to them; but with all their experience they had never beheld a bombardment of Paris; yet, all honour to them, they did not abate one jot of their Academic work. Perhaps the members may have felt it a relief to have to deal with immutable and indestructible facts, while everything around them was so mutable and perishing. Perhaps they remembered a saying of one of their countrymen:—" L'homme n'a pas de self-critérium. L'indestructibilité du fait est le critérium unique, infaillible, absolu, multiple, un, présent dans tous les ordres des connaissances."*

The papers read before the Academy during the period of the siege relate for the most part to matters connected with war and to the food resources of a besieged city. M. Payen writes on hippophagy, M. Frémy on the use of osseine as food, M. Riche on the use of black puddings of ox-blood. In the *Revue des Cours Scientifiques* we also find some important papers by M. Bouchardat on the food supply of Paris, and a paper by the same author on the sanitary condition of the city during the siege, and during the same months of the preceding year. M. Berthelot has contributed some important papers on the force of various explosive substances, both solid, liquid, and gaseous. These papers are well worthy the attention of our war authorities. There is also a paper on dynamite, by M. Champion, and on the ignition of gunpowder at a distance by means of electricity. The subject of balloons and ballooning, of course, engages a good deal of discussion. M. Marey contributes several important papers on the motions of birds during flight, accompanied by graphic representations of them, registered somewhat after the manner of the vibrations of a tuning fork, and shown by sinuous lines. The diagram representing the vertical oscillations of a wild duck during flight is very striking. Beyond these papers there is nothing of much importance.

Here, for example, are the principal papers of one number (December 5th) taken at random:—

M. Milne-Edwards discusses the nutritive value of organic substances contained in bones, and the proper rations for sustaining the human body in a perfect state of health; M. Chevreul makes observations upon M. Frémy's paper on the use of osseine as food; M. Gazeau details various experiments on the nutritive properties of cocoa leaves; M. Montier treats of the specific heat of gases under constant volume; M. Riche of the preparation of osseine and gelatine; and M. Castelhaz of the refining of crude tallow.

The future historian of science will wonder when he reads in the *Comptes Rendus* for January 9, 1871:—

> M. Chevreul donne lecture à l'Académie de la déclaration suivante:
>
> " Le jardin des plantes médicinales, fondé à Paris par édit du Roi Louis XIII. la date du mois de janvier, 1626.
>
> " Devenu le Muséum d'Histoire naturelle par décret de la Convention du 10 de juin 1793.
>
> " Fut bombardé,
>
> " Sous le règne de Guillaume I^{er} roi de Prusse, Comte de Bismark chancelier,
>
> " Par l'armée Prussienne, dans la nuit du 8 au 9 de janvier, 1871.
>
> " Jusque-là, il avait été respecté de tous les partis et de tous les pouvoirs nationaux et étrangers.
>
> " E. CHEVREUL, *Directeur*."

He will grieve when he reads " M. Le Président annonce à l'Académie la douloureuse nouvelle, malheureusement très-probable, de la mort du . . . ." occurring too often in what should be only a record of the living and of their work. So we grieve: and yet more when we see the intellectual resources and energies of a great country paralysed, and the whole current of its active thought diverted no man knows whither; while its schools and colleges are empty, and many of those who should be in them have been killed untimely to satisfy the necessities of war. G. F. RODWELL

---

* *Philosophie Méthodique*, par J. de Strada, a work too little known in this country.

AMERICAN NOTES

WE learn from *Harper's Weekly* that the fourth volume of the " Report of the Geological Survey of Illinois," which has been in progress for several years past, under the direction of Prof. A. H. Worthen, has just been published. Like its predecessors, it is a handsome book, well illustrated, and containing much important matter relating to the geology and physical features of the State. This volume is occupied by a detailed account from assistants in the survey in regard to particular counties in the State, followed by systematic papers—one upon the fossil fishes by Prof. J. S. Newberry and Prof. Worthen, and the other upon fossil plants by Prof. Lesquereaux, illustrated by a number of well engraved steel plates. The economical value of such a survey to the State, conducted with the spirit and efficiency which have marked Prof. Worthen's administration from the beginning, is exceedingly great, and cannot be estimated in dollars and cents. Not merely does it furnish a fund of information to the residents of Illinois, but it supplies an official guarantee to others in regard to the resources of the State which could not be obtained in any other way.—We have, in a previous article, referred to some interesting speculations by Prof. Shaler, of Cambridge, upon the formation of the New England coast; and we find in the proceedings of the Boston Society of Natural History for February last some additional remarks by him on the same subject. He considers that the Chesapeake and Delaware bays, like many of the deep gorges in Switzerland and elsewhere, were formed by the action of ice, and that the existence of Cape Hatteras is due to the uplifting of the rocks on which Richmond is situated. The sand-bars on the coast he believes to have been formed by the material dug out of the Delaware and Chesapeake bays by this ice action, and worked southward by the united force of the floods and currents. He finds that, after we pass these

© 1871 Nature Publishing Group

bars, south of Weldon, the sea-bottom is totally distinct in character, being purely submarine, and formed by the action of the sea. He points out the existence of a rise and fall of the coast at different portions of its extent; this, in the most recent geological period, amounting at Charleston, South Carolina, to from 50 to 60 feet, in Maine to 200 feet, and to a still greater extent on the coast of Labrador. As a general rule, he thought there was evidence to prove that, taking a line from the centre of the continent to the centre of the sea, the sea-floor was coming up and the high elevations were coming down.—Mr. Hyatt states that observations made by the Coast Survey showed that the coast of Long Island Sound, and southward to New Jersey, has been sinking, while the Florida Keys are rising; and Mr. Niles remarked that, from the earliest times, in the Adirondacks and different points southerly, there had been peninsulas corresponding in position to Florida, and that this is simply the most southern and latest of a succession from north to south.—At a meeting of the New York Lyceum of Natural History, held during last autumn, Prof. Newberry, the President, exhibited the anterior portion of the cranium of a walrus which had been found during the summer at Long Branch by a gentleman whose foot struck against it while bathing. It was strongly silicified, but exhibited no appreciable difference from modern specimens. The precise age of this fossil could not, of course, be ascertained, although it is well known that its range was formerly much south of its present habitat. It is not unfrequently brought down on floating ice off the coast of Newfoundland; and although Labrador is at present the southern limit of its residence, it was once very abundant in the Gulf of St. Lawrence, and its remains have been found in the shell heaps of the Bay of Fundy. It is probable that the specimen exhibited by Prof. Newberry is a relic of the glacial period, although it was suggested that it might have been of the tertiary age, which probably cannot be verified. Other specimens of similar character are recorded as having been found on Martha's Vineyard; in Monmouth Co., New Jersey; and in Accomac Co., Virginia.—We have already referred to the detection of an ancient bone cave near Phœnixville, Pennsylvania, and about twenty-five miles north-west of Philadelphia, and to the interest which has attached to this discovery. Since our last account Prof. Cope has been actively engaged in the investigation of the collection, and already reports the existence of about thirty species of vertebrates, together with numerous plants and insects. All of these, so far as known, are probably of extinct species, although their precise relationships have not yet been fully worked out. Among the reptiles were tortoises and serpents, and of birds there was a turkey and a snipe. The mammals, as Prof. Cope anticipated, were most numerous, these including two carnivorous animals of large size, one of them a cat, and the other a bear, previously described by Dr. Leidy, of a remarkable type, and totally distinct from the cave bear, or any living species of either Europe or America. At least three species of sloths were discovered, mostly of gigantic size, one of them a species of *Megalonyx*, and two of *Mylodon*. Besides these, there were some ruminating animals, tapirs, and a small horse. With the other remains were the teeth and tusks of the mastodon. The fissure in which the bones were found was forty feet deep and fifteen feet wide; the length as yet has not been determined. Above the deposit of bones the cave was filled with washings of the Triassic age from the neighbouring hills.

SCIENCE AT OXFORD

THE following courses of lectures in Science are announced for the ensuing term:—The Regius Professor of Medicine (Dr. Acland) will continue his clinical instruction at the Infirmary, on Tuesdays and Saturdays, beginning on Tuesday, May 2, at 11 A.M. The Linacre Professor of Anatomy and Physiology (Dr. Rolleston) proposes to form classes for practical instruction in anatomy and physiology, as in former terms. Persons are invited to come to the anatomical department in the New Museum on two mornings of the week for study and demonstration, and to lectures on Saturdays at 1 P.M., and at such other times as may be hereafter arranged. The Sedleian Professor of Natural Philosophy (the Rev. Bartholomew Price) will give a course of lectures on the Solution of Problems in Applied Mathematics. The course will begin at 1 P.M. on Thursday, April 20, in the lecture-room, upper corridor south, Museum. The Savilian Professor of Astronomy (the Rev. C. Pritchard) will give a lecture early in the present term on the recent solar eclipse. He will also be ready to assist members of the University in their astronomical studies, "*sine ullâ solennitate.*" The Savilian Professor of Geometry (Mr. Henry Smith) will continue his lectures on the Anharmonic Properties of Figures. He will also give a course of lectures on Geometry of Three Dimensions. The Professor of Geology (Mr. J. Phillips) will begin a course of lectures on Monday, April 24, at 12 o'clock, and continue them at the same hour on succeeding Wednesdays and Mondays, in the New Museum. The lectures are arranged to present a systematic view of the more remarkable groups of organic remains, especially in the extinct groups. The Professor of Experimental Philosophy (Mr. R. B. Clifton) has given notice that the Physical Laboratory of the University will be open daily for instruction in practical physics, from 10 A.M. to 4 P.M., on and after Wednesday, April 19. The fee for working three days a week during the term is 3*l.* The Professor of Chemistry (Sir B. Brodie) has given notice that the Demonstrator in Chemistry will deliver a course of lectures on Chemistry on Tuesdays and Saturdays, at 11 A.M., commencing Tuesday, April 25. These lectures will be in continuation of the course of the Professor of Chemistry last term, and will commence with the element phosphorus and its combinations. The Professor of Botany (Mr. Lawson) will give a course of lectures on Structural and Physiological Botany. The Hope Professor of Zoology (Mr. Westwood) proposes to give a short course of lectures on the Articulated Animals.

SETTLE CAVE EXPLORATION

AT the last meeting of the Settle Cave Exploration Committee, the report of the excavation of the Victoria Cave, up to December 31st, 1870, by Mr. Boyd Dawkins, was read.

The results of the exploration are full of interest, and bid fair to throw light on the social condition of the Romano-Celtic inhabitants of Ribblesdale after the withdrawal of the Roman legions. The committee placed the superintendence of their exploration in the charge of Mr. Jackson, the discoverer of the cave, and began work with the kind permission of the owner (Mr. Stackhouse), by clearing away a mass of debris, which very nearly blocked up the lower entrance and formed a horizontal plateau extending some thirty feet from the solid rock. On the surface there was a stratum of angular stones which had fallen from the weathered face of the rock above, and passed into the cave at the bottom of the Attermire ravine. Below was the layer which furnished traces of man. Mixed with charcoal there were large quantities of the bones and teeth of the Celtic short-horn (*Bos longifrons*), goat, and horse, and a few remains of red deer and roe deer, which were evidently the refuse of human food. There were also fragments of pottery, bone pins, and various nondescript articles in antler and bone, stone pot-boilers, and two perforated discs of stone which had been used as spindle-whorls. As this layer passed into the cave, it rose to the surface and continued to

© 1871 Nature Publishing Group